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A-03075 FIGS. 1-24

FIG. 1

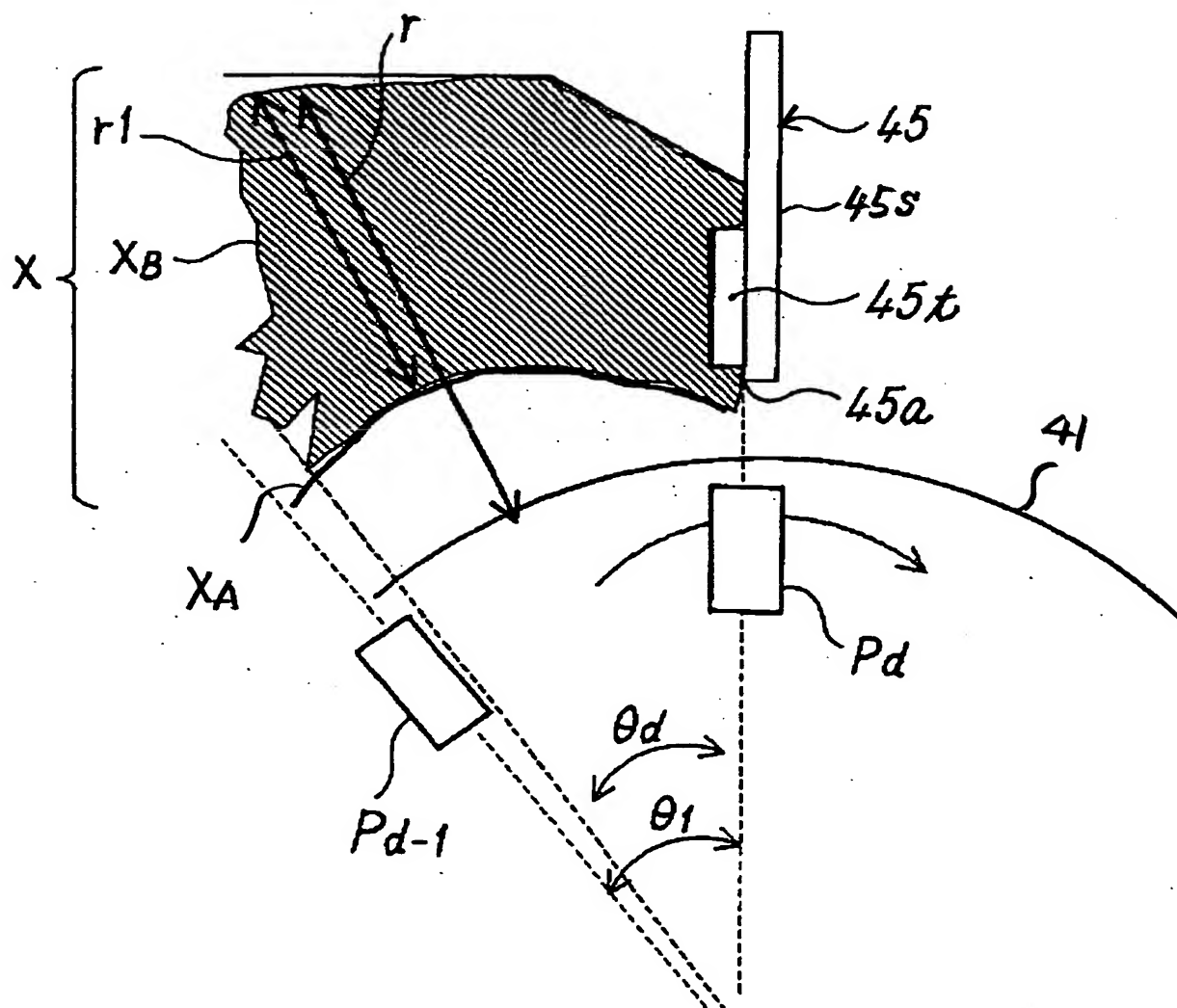


FIG. 2

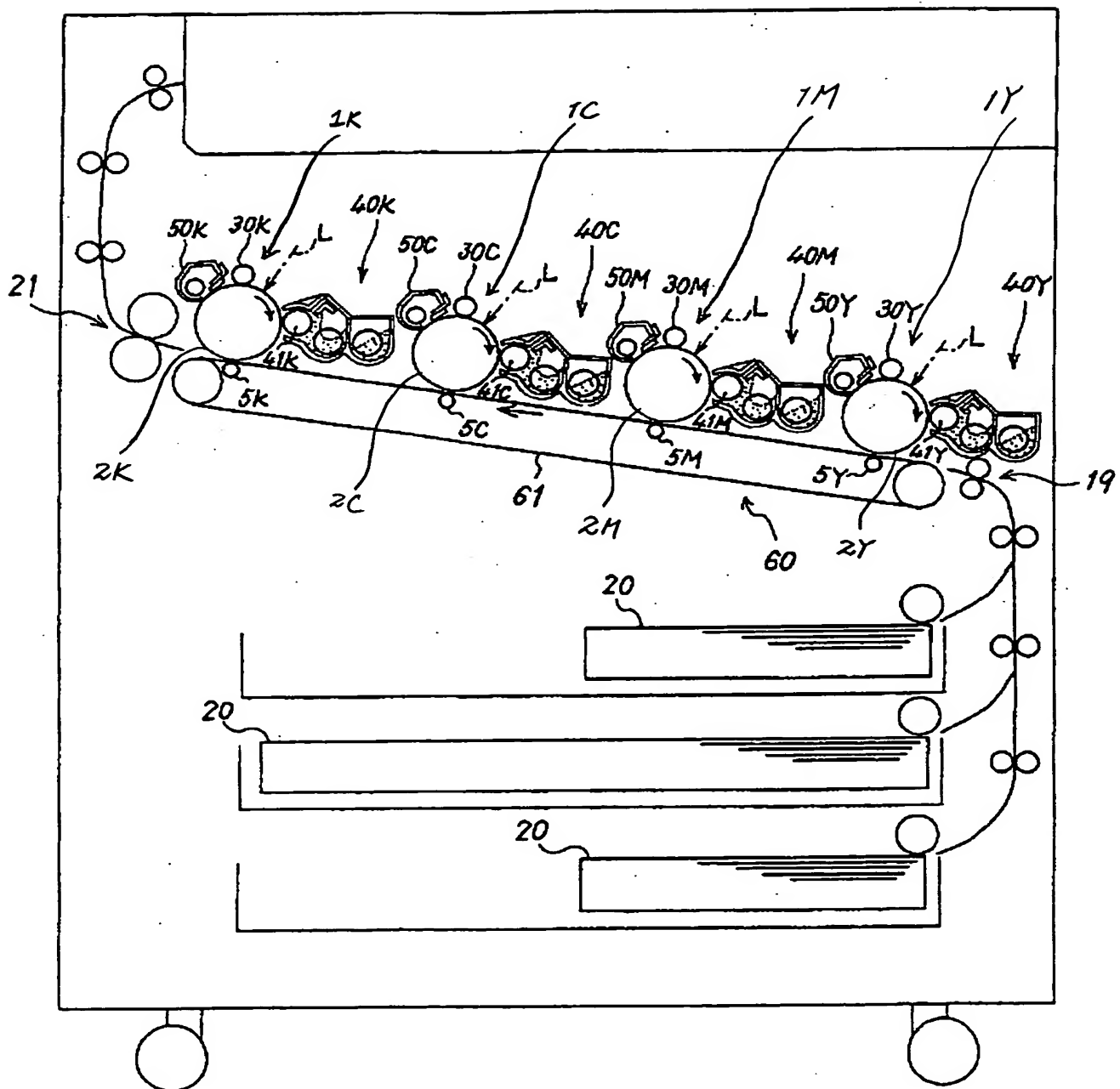


FIG. 3

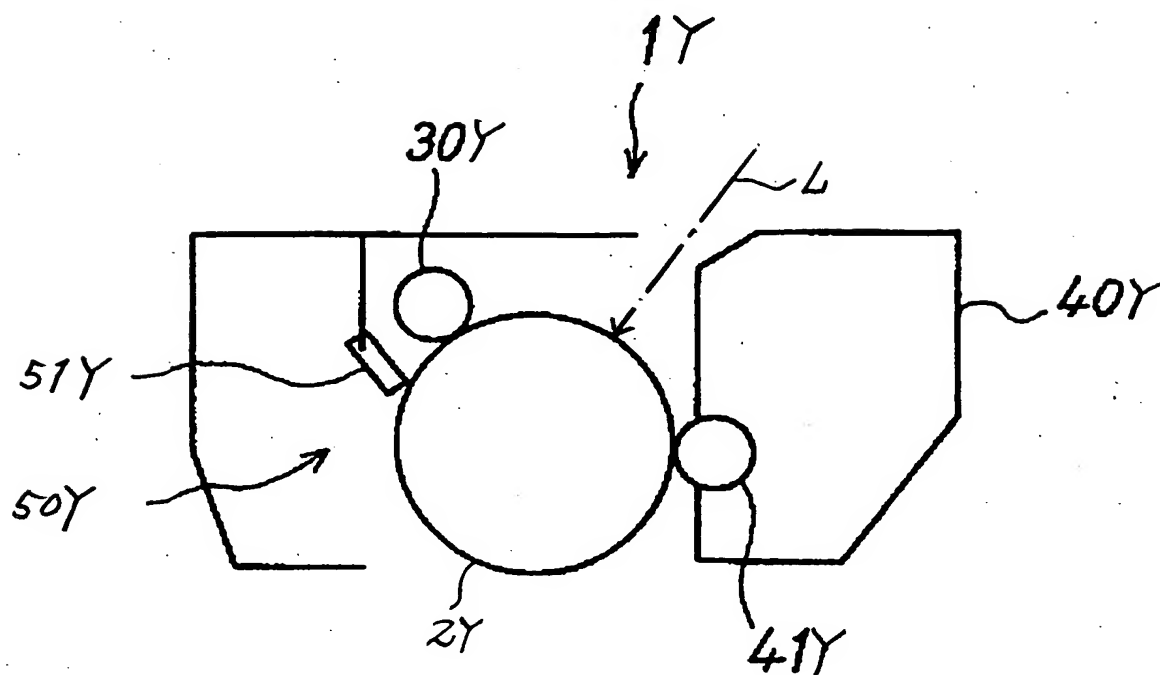


FIG. 4

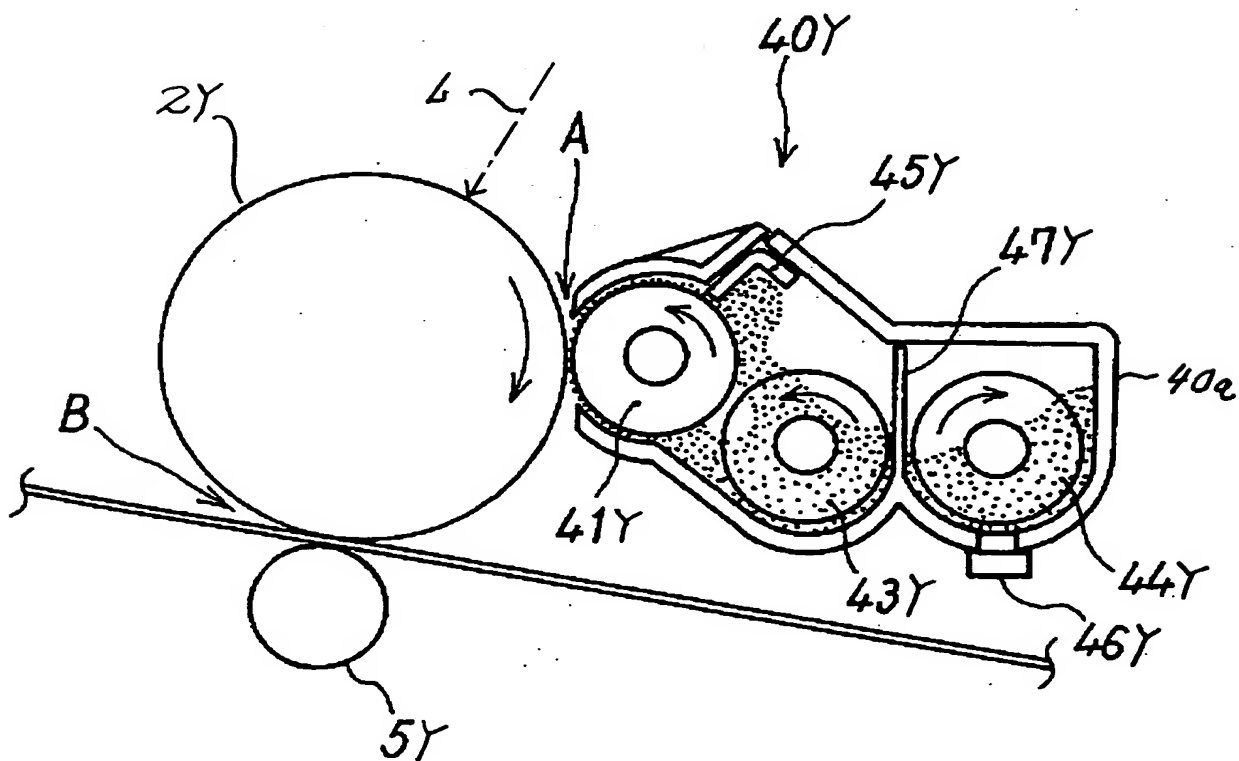


FIG. 5

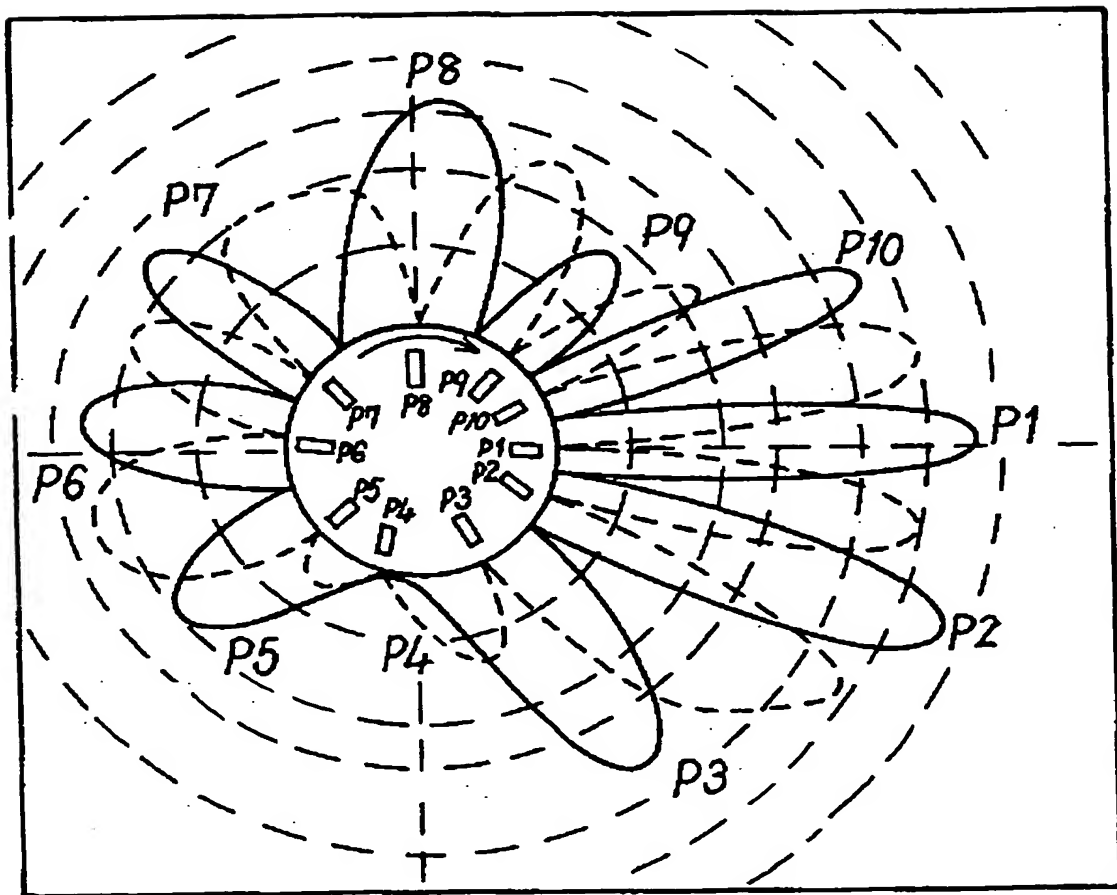


FIG. 6

	TORQUE (kgf/cm)	$\theta_1$	$\theta_2$	$\theta_2/\theta_1$
CONDITION 1	1.6	45	30	2/3
CONDITION 2	1.3	45	20	4/9
CONDITION 3	1.2	45	18	2/5
CONDITION 4	1	45	15	1/3
CONDITION 5	0.7	45	10	2/9
CONDITION 6	1.8	30	30	1
CONDITION 7	1.7	30	25	5/6
CONDITION 8	1.3	30	18	3/5
CONDITION 9	1.1	30	12	2/5
CONDITION 10	0.9	30	8	4/15

FIG. 7

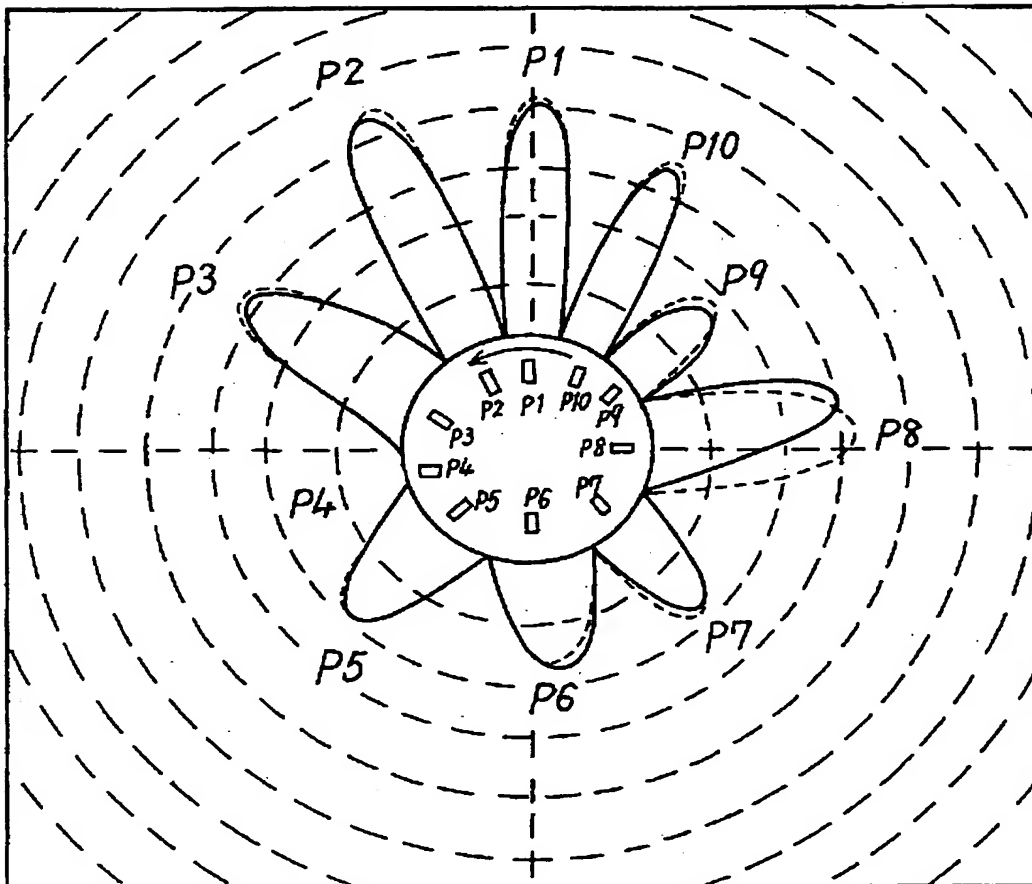


FIG. 8

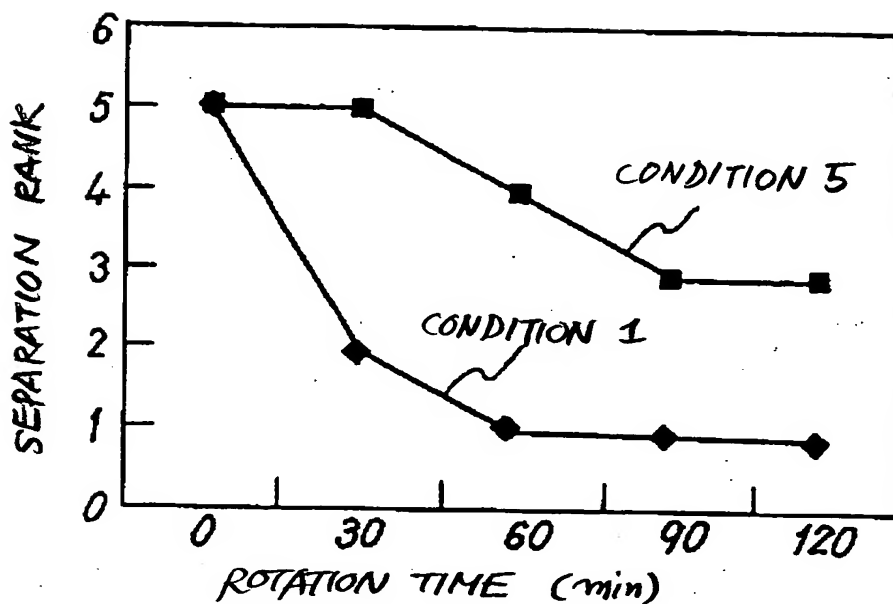


FIG. 9

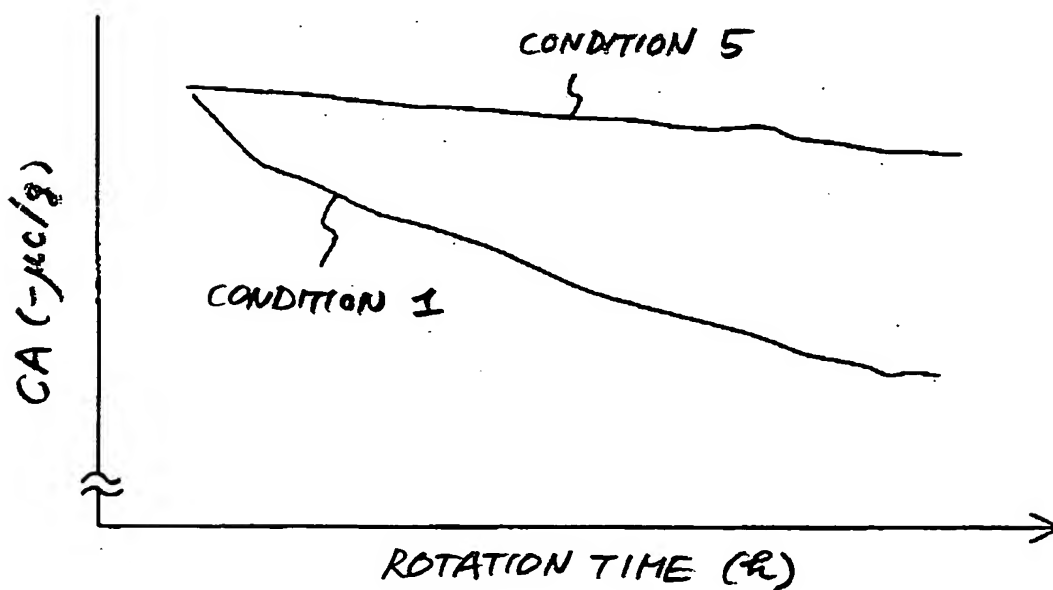




FIG. 10

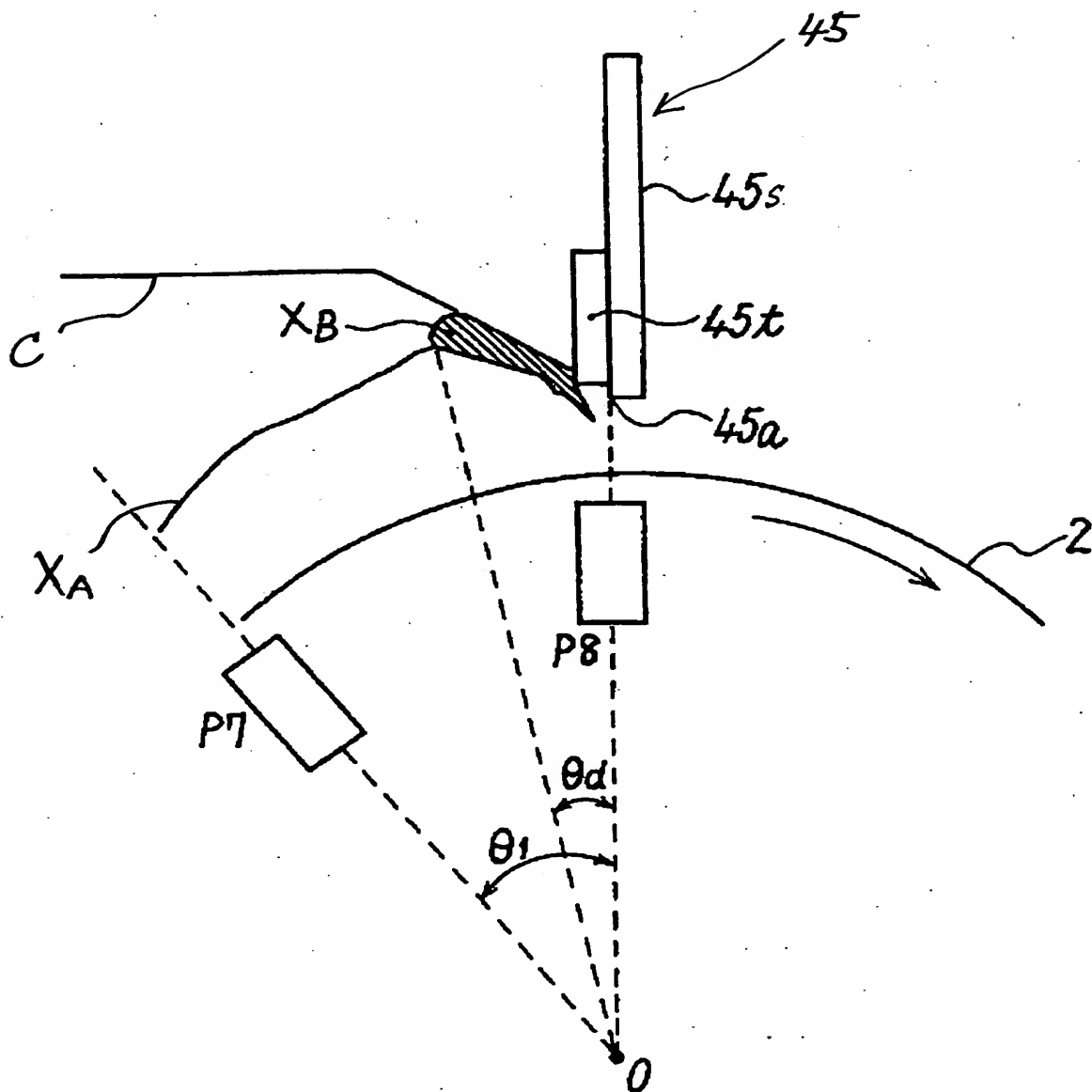


FIG. 11

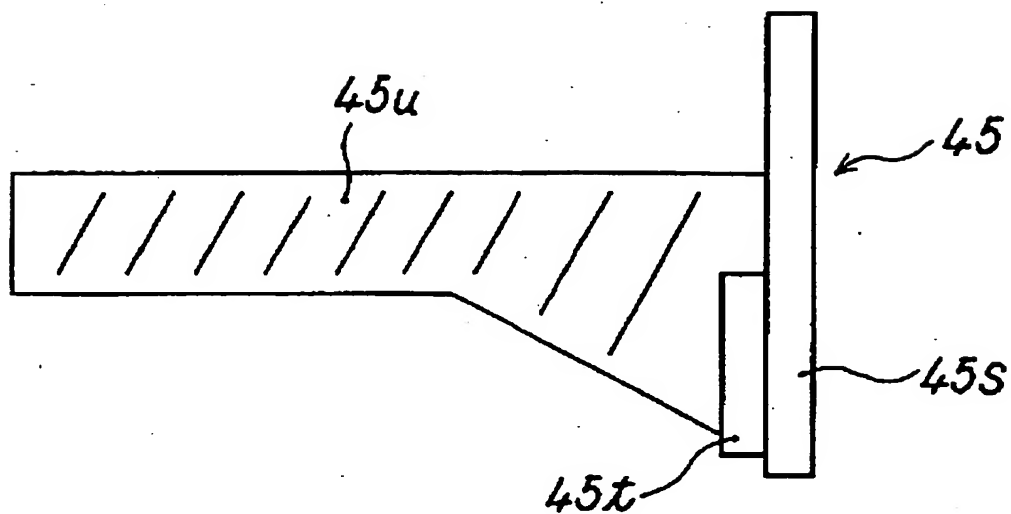


FIG. 12A

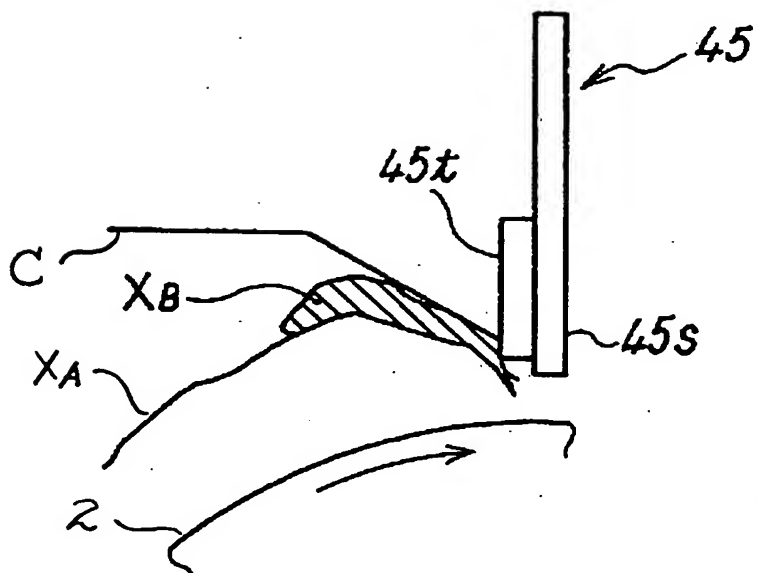


FIG. 12B

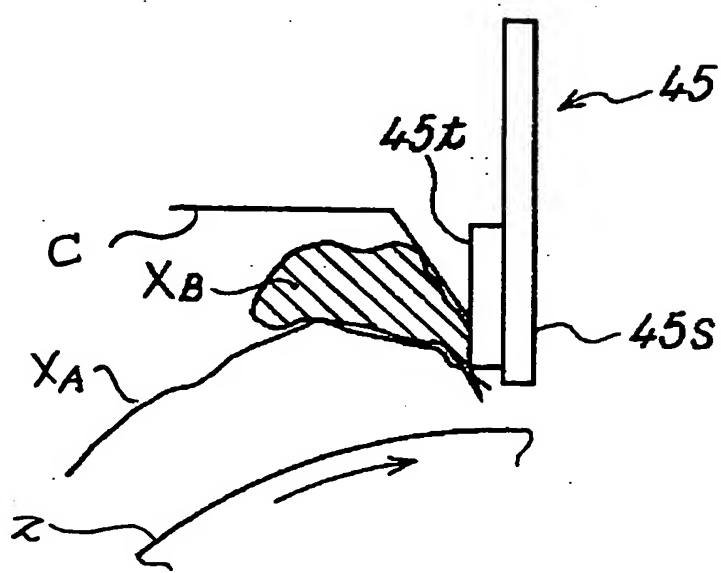


FIG. 13

$r1/r$	STABILITY
1/1	X
1/2	X
1/3	O
1/4	O

FIG. 14

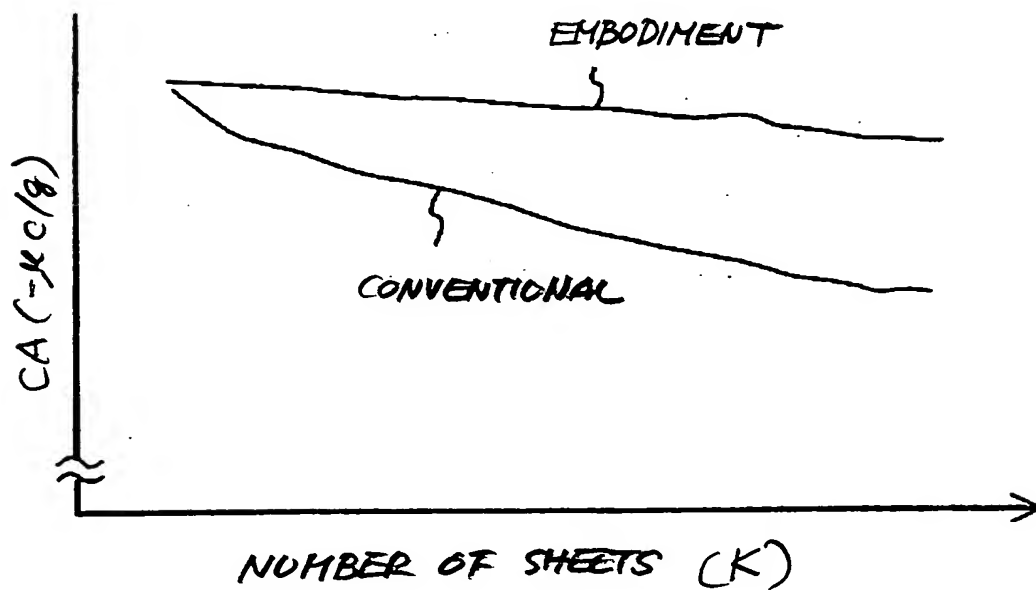


FIG. 15

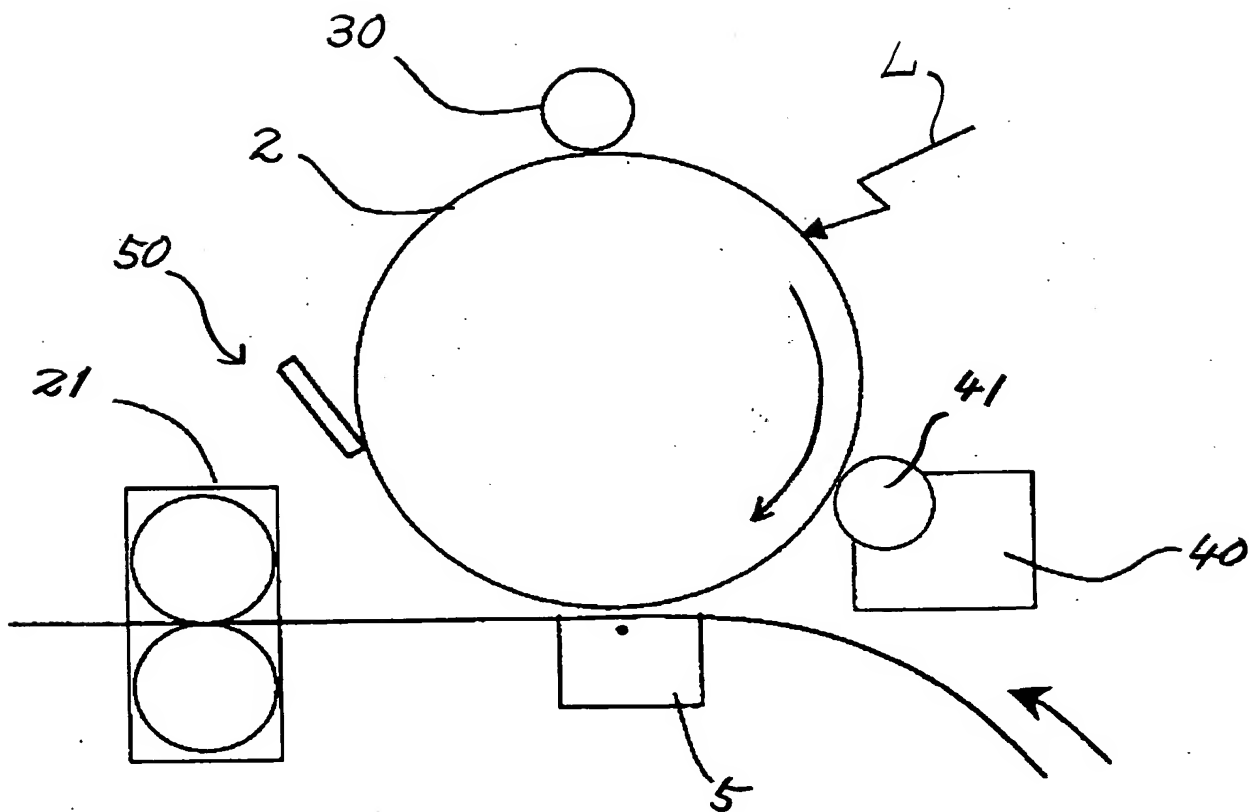


FIG. 16

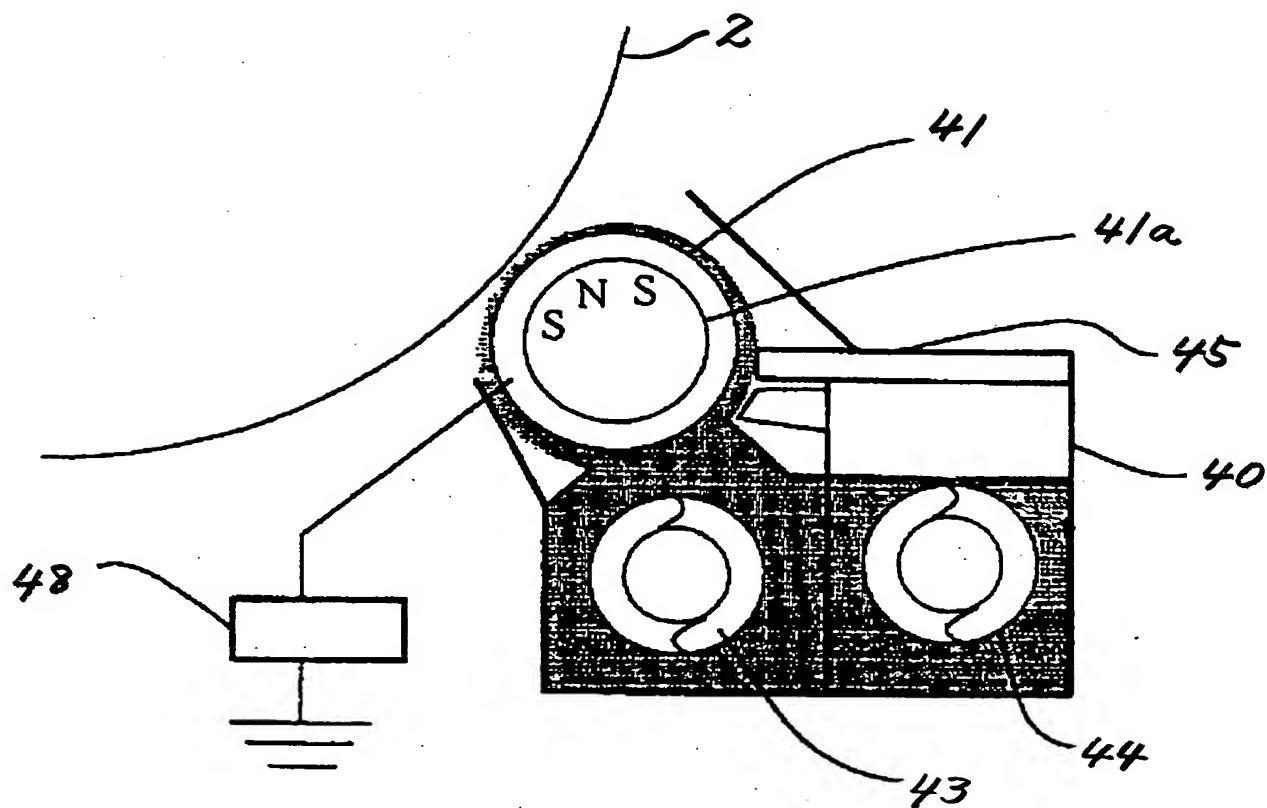


FIG. 17

	GRANULARITY	Dv/Dn	CIRCULARITY
TONER 1	6.8	1.32	0.89
TONER 2	5.5	1.15	0.97
TONER 3	4.2	1.10	0.94
TONER 4	7.8	1.24	0.96
TONER 5	3.5	1.19	0.96
TONER 6	8.2	1.15	0.95

FIG. 18

CONDITION	TOTAL AMOUNT (g)	AMOUNT OF SLEEVE (g)	METERING METHOD	TONER	CARRIER	GRANULARITY	TONER SCATTERING	BACK- GROUND FOG	CARRIER DEPOSITION	CARRIER CHARGING
CONDITION 1	200	90	NONMAGNETIC	TONER 1	CARRIER 1	Δ	○	○	○	Δ
CONDITION 2	200	90	MAGNETIC	TONER 2	CARRIER 1	○	○	○	○	○
CONDITION 3	200	90	MAGNETIC	TONER 3	CARRIER 1	○	○	○	○	○
CONDITION 4	200	90	MAGNETIC	TONER 4	CARRIER 1	Δ	○	○	○	○
CONDITION 5	200	90	MAGNETIC	TONER 5	CARRIER 1	Δ	Δ	Δ	○	○
CONDITION 6	200	90	MAGNETIC	TONER 6	CARRIER 1	Δ	○	○	○	○
CONDITION 7	200	90	MAGNETIC	TONER 2	CARRIER 2	○	○	○	○	○
CONDITION 8	200	90	MAGNETIC	TONER 2	CARRIER 3	Δ	Δ	Δ	○	Δ
CONDITION 9	200	90	MAGNETIC	TONER 2	CARRIER 4	○	x	x	Δ	x
CONDITION 10	200	120	MAGNETIC	TONER 2	CARRIER 1	○	Δ	Δ	○	x
CONDITION 11	200	150	MAGNETIC	TONER 2	CARRIER 1	○	x	x	○	x
CONDITION 12	300	140	MAGNETIC	TONER 2	CARRIER 1	○	○	○	○	○
CONDITION 13	300	180	MAGNETIC	TONER 2	CARRIER 1	○	Δ	Δ	○	x
CONDITION 14	400	190	NONMAGNETIC	TONER 2	CARRIER 1	○	○	○	○	Δ
CONDITION 15	400	220	NONMAGNETIC	TONER 2	CARRIER 1	○	Δ	○	○	x

FIG. 19

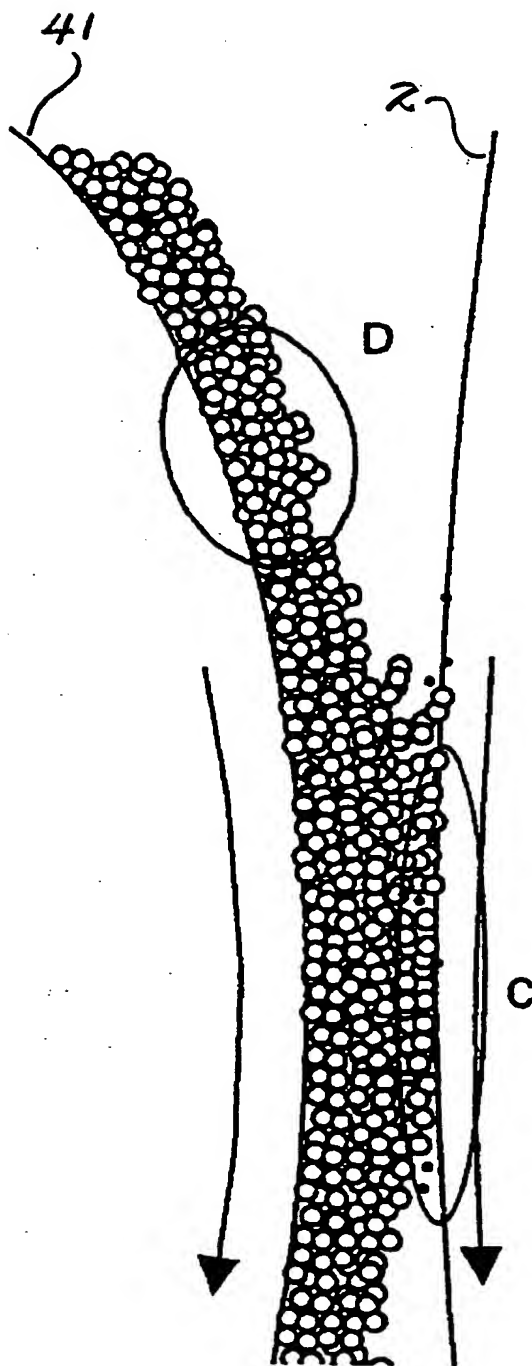




FIG. 20

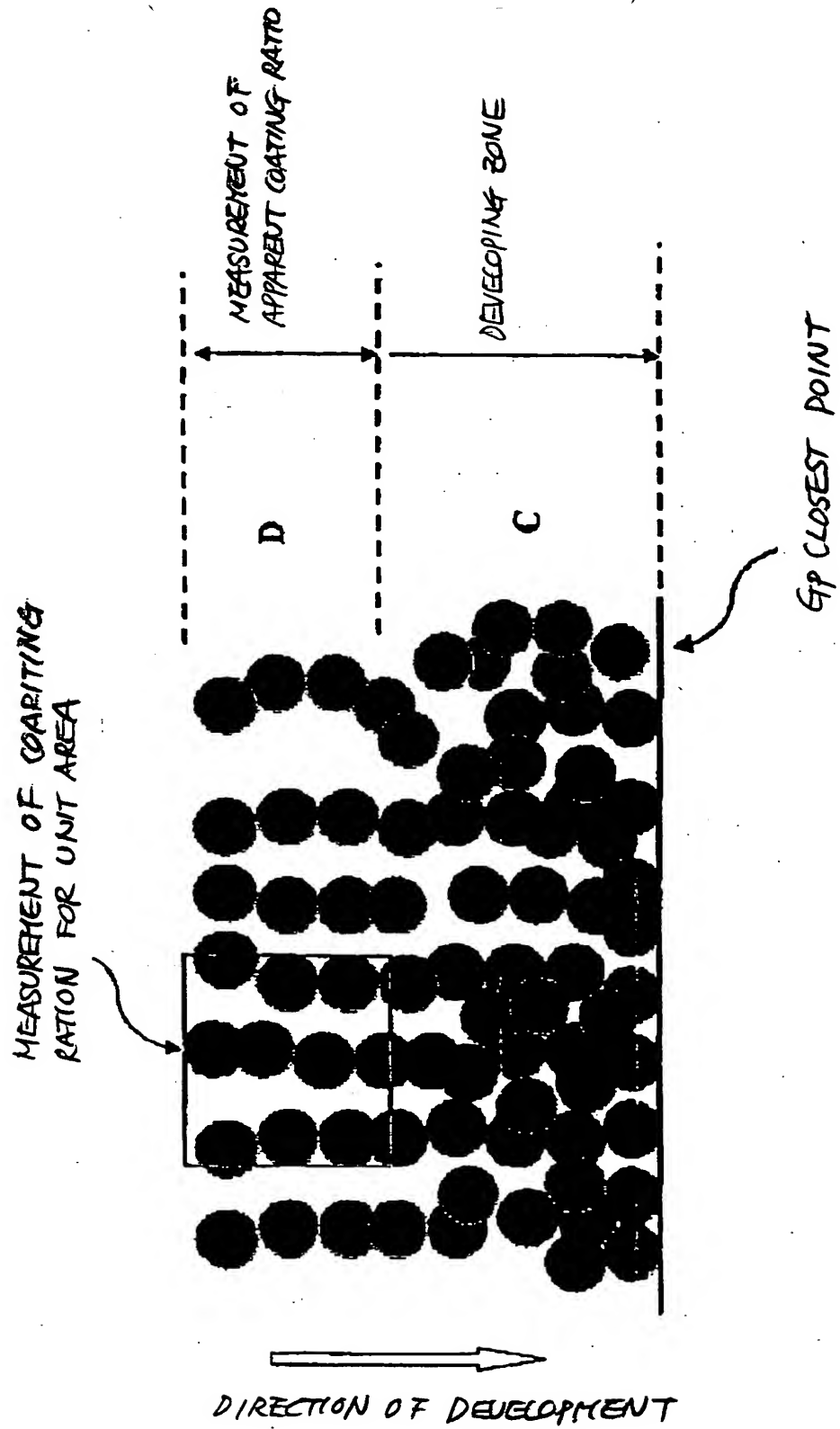


FIG. 21

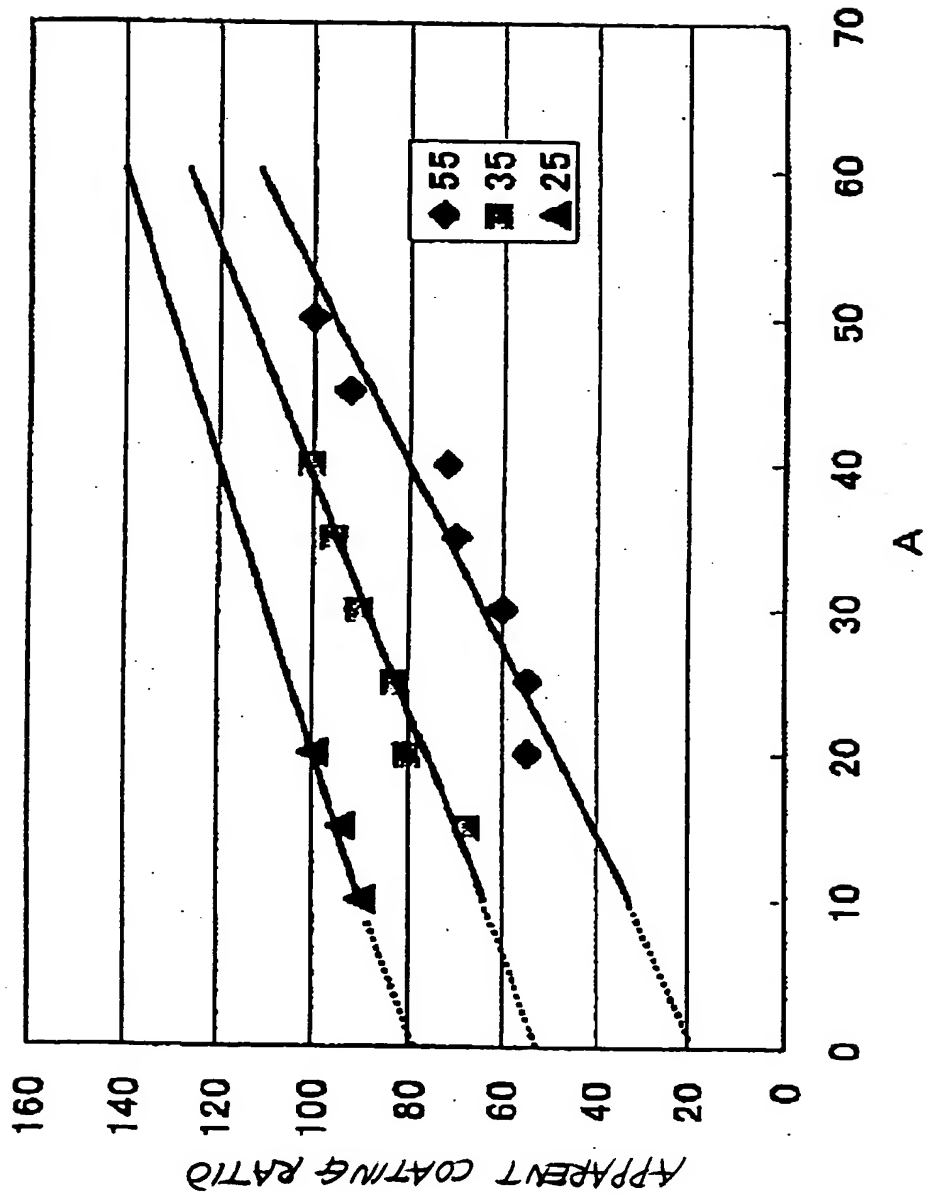


FIG. 22

CARRIER GRAIN SIZE: 55 $\mu$ m

	Gp (cm <sup>3</sup> )	$\rho_c$ (g/cm <sup>3</sup> )	$\rho_r$ (g/cm <sup>3</sup> )	A (g/cm <sup>2</sup> )	APPARENT COATING RATIO M	Gp x $\rho_r$	CARRIER DEPOSITION	ROUGHNESS	SOLID IMAGE DENSITY	OMISSION AROUND SOLD	TONER SCATTERING
CONDITION 1	0.05	5.2	2.2	0.07	125	0.11	x	O	O	x	x
CONDITION 2	0.05	5.2	2.2	0.06	110	0.11	O	O	O	x	O
CONDITION 3	0.05	5.2	2.2	0.05	100	0.11	O	O	O	x	O
CONDITION 4	0.05	5.2	2.2	0.04	70	0.11	O	x	O	x	O
CONDITION 5	0.05	5.2	2.2	0.03	60	0.11	O	x	x	x	x
CONDITION 6	0.05	5.2	2.2	0.02	55	0.11	x	x	x	x	x
CONDITION 7	0.04	5.2	2.2	0.07	125	0.09	x	O	O	O	O
CONDITION 8	0.04	5.2	2.2	0.06	110	0.09	O	O	O	O	O
CONDITION 9	0.04	5.2	2.2	0.05	100	0.09	O	x	O	O	O
CONDITION 10	0.04	5.2	2.2	0.04	70	0.09	O	x	O	O	O
CONDITION 11	0.04	5.2	2.2	0.03	60	0.09	O	x	O	x	O
CONDITION 12	0.04	5.2	2.2	0.02	55	0.09	O	x	x	x	x
CONDITION 13	0.03	5.2	2.2	0.07	125	0.07	x	O	O	x	x
CONDITION 14	0.03	5.2	2.2	0.06	110	0.07	O	O	O	O	O
CONDITION 15	0.03	5.2	2.2	0.05	100	0.07	O	O	O	O	O
CONDITION 16	0.03	5.2	2.2	0.04	70	0.07	O	x	O	O	O
CONDITION 17	0.03	5.2	2.2	0.03	60	0.07	O	x	O	O	O
CONDITION 18	0.03	5.2	2.2	0.02	55	0.07	O	x	O	O	O
CONDITION 19	0.02	5.2	2.2	0.07	125	0.04	x	O	O	O	O
CONDITION 20	0.02	5.2	2.2	0.06	110	0.04	O	O	O	O	O
CONDITION 21	0.02	5.2	2.2	0.05	100	0.04	O	O	O	O	O
CONDITION 22	0.02	5.2	2.2	0.04	70	0.04	x	x	O	O	O
CONDITION 23	0.02	5.2	2.2	0.03	60	0.04	O	x	O	O	O
CONDITION 24	0.02	5.2	2.2	0.02	55	0.04	O	x	O	x	O

FIG. 23

CARRIER GRAIN SIZE: 75  $\mu\text{m}$

	Gp (cm)	$\rho_c$ (g/cm <sup>3</sup> )	$\rho_T$ (g/cm <sup>3</sup> )	A (g/cm <sup>2</sup> )	APPARENT COATING RATIO M	Gp x pT	CARRIER DEPOSITION	ROUGHNESS	SOLID IMAGE DENSITY	OMISSION AROUND SOLID	TOWER SCATTERING
CONDITION 1	0.05	5.2	1.8	0.07	140	0.09	x	○	○	x	x
CONDITION 2	0.05	5.2	1.8	0.06	130	0.09	○	○	○	x	○
CONDITION 3	0.05	5.2	1.8	0.05	120	0.09	○	○	○	○	○
CONDITION 4	0.05	5.2	1.8	0.04	100	0.09	○	○	○	○	○
CONDITION 5	0.05	5.2	1.8	0.03	90	0.09	○	x	○	○	○
CONDITION 6	0.05	5.2	1.8	0.02	80	0.09	○	x	x	x	x
CONDITION 7	0.04	5.2	1.8	0.07	140	0.07	x	○	○	x	x
CONDITION 8	0.04	5.2	1.8	0.06	130	0.07	○	○	○	x	○
CONDITION 9	0.04	5.2	1.8	0.05	120	0.07	○	○	○	○	○
CONDITION 10	0.04	5.2	1.8	0.04	100	0.07	○	○	○	○	○
CONDITION 11	0.04	5.2	1.8	0.03	90	0.07	○	○	○	○	○
CONDITION 12	0.04	5.2	1.8	0.02	80	0.07	○	x	x	○	○
CONDITION 13	0.03	5.2	1.8	0.07	140	0.05	x	○	○	x	x
CONDITION 14	0.03	5.2	1.8	0.06	130	0.05	x	○	○	x	○
CONDITION 15	0.03	5.2	1.8	0.05	120	0.05	○	○	○	x	○
CONDITION 16	0.03	5.2	1.8	0.04	100	0.05	○	○	○	○	○
CONDITION 17	0.03	5.2	1.8	0.03	90	0.05	○	○	○	○	○
CONDITION 18	0.03	5.2	1.8	0.02	80	0.05	○	x	○	○	○
CONDITION 20	0.02	5.2	1.8	0.07	140	0.04	x	○	○	x	x
CONDITION 21	0.02	5.2	1.8	0.06	130	0.04	x	○	○	x	x
CONDITION 22	0.02	5.2	1.8	0.05	120	0.04	○	○	○	○	○
CONDITION 23	0.02	5.2	1.8	0.04	100	0.04	○	○	○	○	○
CONDITION 24	0.02	5.2	1.8	0.03	90	0.04	○	○	○	○	○
CONDITION 25	0.02	5.2	1.8	0.02	80	0.04	○	x	○	○	○

FIG. 24

CARRIER GRAIN SIZE: 25  $\mu\text{m}$

	Gp (cm)	$\rho_C$ (g/cm <sup>3</sup> )	$\rho_T$ (g/cm <sup>3</sup> )	A (g/cm <sup>2</sup> )	APPARENT COATING RATIO M	Gp x $\rho_T$	CARRIER DEPOSITION	ROUGHNESS	SOLID IMAGE DENSITY	OMISSION AROUND SOLID	TONER SCATTERING
CONDITION 1	0.05	5.2	1.5	0.07	150	0.08	x	O	O	x	x
CONDITION 2	0.05	5.2	1.5	0.06	140	0.08	x	O	O	x	O
CONDITION 3	0.05	5.2	1.5	0.05	130	0.08	x	O	O	O	O
CONDITION 4	0.05	5.2	1.5	0.04	120	0.08	x	O	O	O	O
CONDITION 5	0.05	5.2	1.5	0.03	110	0.08	x	O	O	O	O
CONDITION 6	0.05	5.2	1.5	0.02	100	0.08	x	x	x	x	x
CONDITION 7	0.04	5.2	1.5	0.07	150	0.06	x	O	O	x	x
CONDITION 8	0.04	5.2	1.5	0.06	140	0.06	x	O	O	x	O
CONDITION 9	0.04	5.2	1.5	0.05	130	0.06	O	O	O	x	O
CONDITION 10	0.04	5.2	1.5	0.04	120	0.06	O	O	O	O	O
CONDITION 11	0.04	5.2	1.5	0.03	110	0.06	O	O	O	O	O
CONDITION 12	0.04	5.2	1.5	0.02	100	0.06	O	O	O	O	O
CONDITION 13	0.03	5.2	1.5	0.07	150	0.05	x	O	O	x	x
CONDITION 14	0.03	5.2	1.5	0.06	140	0.05	x	O	O	x	x
CONDITION 15	0.03	5.2	1.5	0.05	130	0.05	x	O	O	x	O
CONDITION 16	0.03	5.2	1.5	0.04	120	0.05	O	O	O	O	O
CONDITION 17	0.03	5.2	1.5	0.03	110	0.05	O	O	O	O	O
CONDITION 18	0.03	5.2	1.5	0.02	100	0.05	O	O	O	O	O
CONDITION 20	0.02	5.2	1.5	0.07	150	0.03	x	O	O	x	O
CONDITION 21	0.02	5.2	1.5	0.06	140	0.03	x	O	O	x	O
CONDITION 22	0.02	5.2	1.5	0.05	130	0.03	x	O	O	x	O
CONDITION 23	0.02	5.2	1.5	0.04	120	0.03	O	O	O	O	x
CONDITION 24	0.02	5.2	1.5	0.03	110	0.03	O	O	O	O	O
CONDITION 25	0.02	5.2	1.5	0.02	100	0.03	O	O	O	O	O